10. Paaus

Program Name: Paaus.java **Input File: paaus.dat**

There are four types of integer literals in Java. To differentiate between the different kinds of literals, each group has its own prefix.

The kinds of integer literals are:

- decimal literals, which allow programmers to write numbers in base 10, with no prefix
- hexadecimal literals, which allow programmers to write numbers in base 16, with prefix "0x"
- octal literals, which allow programmers to write numbers in base 8, with prefix "0"
- and binary literals which allow programmers to write numbers in base 2. with prefix "0b"

For example, 0xb2, 178, 0262, and 0b10110010 are all different ways of writing the same number.

Pauus has a positive number he wants to type into his Java program, but one of the keys on his keyboard is broken. Help him find a way to input his desired number using the fewest number of characters.

Input:
The first line is a positive integer T (T <= 60), the number of test cases. Each test case has N, the number Pauus wants to type, and K, the broken key on his keyboard. N is a non-negative integer written in base 10 less than or equal to 10^9, and K is either a single digit or a lowercase english letter in the range a—f.

Output:
For each test case, output the shortest integer literal that is equal to N and does not include the digit K. Use lowercase English letters when outputting hexadecimal digits. If there are multiple literals of the same length, output the one in the lowest base. If there are no way to write the value, output "Impossible". Format your answer with the case number as in the samples.

Sample Input:

```
3
15 5
33 2
17 1
```

Sample Output:

```
Case #1: 017
Case #2: 33
Case #3: Impossible
```

Sample Explanation:
In the first sample, Paaus cannot write "15" as a decimal literal because it has a "5" in it. Instead he chooses to write "017", the octal literal representing the same value.
In the third sample, it is impossible to write the value 17 as a Java literal without the "1" digit.